

## ANTIFREEZE

Antifreeze is a mixture of water, coolant, and additives. It is used to protect engines and other equipment against overheating and corrosion and also from freezing in low temperatures. It is also used as a deicing agent for airplanes. Different regulations apply to residential and facility unwanted or waste antifreeze.

### HOUSEHOLD DISPOSAL OPTIONS

If you maintain your own personal vehicles, boats, or home's hot water solar collectors and have waste antifreeze, check with the [local recycling coordinator](#) or go to [www.earth911.org](http://www.earth911.org) to see if there are any local businesses or household hazardous waste collection programs available in your area that accepts it. Keep new and waste antifreeze in closed, labeled containers. To reduce the chance of accidental poisonings, do not put antifreeze in food containers. Store it where pets and children can not get to it. Do not mix it with other wastes unless the recycler will accept that mixture. Do NOT pour it into a septic system or a storm drain or onto the ground for disposal.

If you use antifreeze to protect your cabin or vacant building plumbing from cold weather, check with the health department to see if there are any local restrictions if you are on a septic system. If you are connected to a municipal wastewater treatment plant, check if there are local restrictions with that operating authority. The Department of Labor and Economic Growth, Plumbing Division suggests using products approved for RV plumbing, or select products made with propylene glycol. Keep toilet lids closed so pets don't drink the water.

If you are maintaining business vehicles at a residence, see the remainder of this guidance which summarizes requirements for facilities handling antifreeze.

Worldwide, over 400 million gallons of antifreeze concentrate are sold each year. After the typical 50% dilution with water, this yields about 800 million gallons of coolant. It is estimated between 25 to 50% of this volume ends up improperly in the environment,

### TYPES OF ANTIFREEZE

There are several technologies used to make and recycle antifreeze. The two most common coolants are ethylene glycol (EG) or propylene glycol (PG) of which ethylene glycol is more commonly used. Glycols are sold under a variety of brand names. Since chemicals may be known by different names, regulations often reference Chemical Abstract Substance (CAS) numbers.

- ❖ **Ethylene glycol** (EG) has a CAS number 107-21-1 and synonyms include 1,2-dihydroxyethane, 1,2-ethanediol, 2-hydroxyethanol, ethylene alcohol, glycol, glycol alcohol, monoethylene glycol, and ethylene dihydrate. It should not be confused with ethylene glycol ethers which are a different group of chemicals. Ethylene glycol can also be found in brake fluids, liquid rust inhibitors, hydraulic fluids, solar collectors, decorative snow globes, cosmetics, paints, inks, and other products. See additional synonyms and other information at [www.epa.gov/iris/subst/0238.htm](http://www.epa.gov/iris/subst/0238.htm)
- ❖ **Propylene glycol** (PG) has a CAS number 57-55-6 and synonyms include methyl glycol, methylethyl glycol, methylethylene glycol, monopropylene glycol, 1,2-Dihydroxypropane, 2-Hydroxypropanol, and 2,3-Propanediol. Propylene glycol is also used in hydraulic fluids, food products, pharmaceuticals, cosmetics, and solar collectors. See additional synonyms and other information at [www.epa.gov/ncea/iris/subst/0543.htm](http://www.epa.gov/ncea/iris/subst/0543.htm)

## REGULATIONS

Antifreeze is regulated by the Department of Environmental Quality (DEQ) under [several Parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended \(Act 451\) and their administrative rules](#). These Parts and the regulating DEQ Divisions include:

- **Part 31 Water Resources Protection** (permitting of discharges into [surface water](#) and [groundwater](#), and ethylene glycol is also regulated under the [Part 5 rules](#) which has requirements for storage, inspections, release reporting, and pollution prevention planning — Water Bureau)
- **Part 55 Air Pollution Control** (permitting of some recycling units, installing storage or transfer operations of volatile organic compounds of noncarcinogenic liquids, and using for deicing planes — Air Quality Division)
- **Part 111 Hazardous Waste Management** (managing it as hazardous waste if it meets characteristics or a facility may choose to manage hazardous waste antifreeze as universal waste. Universal waste antifreeze only pertains to mixtures containing ethylene glycol or propylene glycol that were used as a heat transfer or dehydration fluid [R 299.9101] — Waste and Hazardous Materials Division)
- **Part 121 Liquid Industrial Wastes** (managing it when not a hazardous waste — Waste and Hazardous Materials Division)
- **Part 201 Environmental Response** (reporting releases and cleaning up contamination — Remediation and Redevelopment Division)
- **Part 211 Underground Storage Tank Regulations** (storing ethylene glycol in regulated underground tanks — Waste and Hazardous Materials Division)
- **Part 213 Leaking Underground Storage Tanks** (reporting releases and cleaning up contamination from regulated underground tanks — Remediation and Redevelopment Division)

In addition to the above DEQ regulations, other agencies and regulations that may apply to antifreeze include:

- **US Environmental Protection Agency (EPA)**
  - ❖ Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [40 CFR Part 302] for federal release reporting requirements of ethylene glycol releases since it is listed as a hazardous substance in Table 302.4. See [www.epa.gov/lawsregs/laws/index.html](http://www.epa.gov/lawsregs/laws/index.html)
  - ❖ **SARA Title III** [40 CFR Parts 370 and 372] for federal requirements for notifying under Section 312 (Tier II form) if more than 10,000 pounds of ethylene glycol and mixtures (approximately 1200 gallons) is kept on site at any one time.  
Reporting is required under Section 313 (Form R) if the facility meets the *activity* threshold for ethylene glycol, is a covered industry based on its [NAICS code](#), and has 10 or more full-time employees or equivalent of 20,000 hours/year.  
See [www.michigan.gov/deqsara](http://www.michigan.gov/deqsara) or call 517-373-8481 for more SARA Title III information.
  - ❖ Resource Conservation and Recovery Act (RCRA) [[40 CFR Parts 260-299](#)] for federal requirements of managing hazardous waste, and storing ethylene glycol in underground storage tanks. Michigan has authority to oversee these requirements. See [www.epa.gov/lawsregs/laws/index.html](http://www.epa.gov/lawsregs/laws/index.html)
- **US Department of Transportation** [49 CFR Parts 100-199] for shipping containers, shipping labels and papers, placarding, etc of hazardous materials. See [hazmat.dot.gov](http://hazmat.dot.gov) and discuss requirements with either the USDOT at 800-467-4922 or Michigan State Police at 517.336.6580.
- **Michigan Department of Consumer and Industry Services** [29 CFR Part 1910.1200] for training and awareness requirements under the Hazardous Communication Standard (Right-to-Know). See information and standards at [www.michigan.gov/miosha](http://www.michigan.gov/miosha) and call their Consultation Education and Training Division at 517-322-1809.
- **Local requirements** vary depending on local building and zoning ordinances. Contact the local authorities such as the building, zoning, or local health department environmental section office for more information.

Facilities interested in manufacturing or recycling antifreeze also need to meet, but not limited to the following:

- Applicable American Society for Testing and Material (ASTM) specifications which can be purchased at [www.astm.org](http://www.astm.org).
- [Requirements for using certified measuring equipment](#) overseen by the Department of Agriculture, Weights and Measures Division. Call 517-655-8202 X304 with questions about the weights and measures act (Act 283 of 1964) and state labeling laws.
- [MIOSHA requirements](#) regarding worker health and safety, labeling, and requirements to provide Material Safety Data Sheets (MSDS) with products. Contact their Consultation Education and Training Division at 517-322-1809.
- The Federal Fair Packaging and Labeling Act for labeling of recycled or recyclable materials at [www.ftc.gov/os/statutes/fplajump.shtm](http://www.ftc.gov/os/statutes/fplajump.shtm)
- Other state regulations where your products will be sold, including requirements for that state's requirements for additives and labeling recycled products.
- Facility requirements for managing, treating, and disposing of liquid industrial waste, hazardous waste or universal waste.
  - If a facility accepts non hazardous antifreeze for recycling or disposal, they must follow the liquid industrial waste designated facility requirements in Part 121. Discuss questions with district staff.
  - If a recycler accepts universal waste for processing and places it directly into a process tank without storing it on-site, they need to follow the universal waste handler regulations and designated facility requirements in Part 121. Discuss questions with district staff.
  - If a facility accepts universal waste or hazardous waste antifreeze for disposal, or for recycling but stores it prior to processing, they must meet the universal waste destination facility and hazardous waste treatment, storage and disposal facility requirements. Discuss requirements with the Waste and Hazardous Materials Division hazardous waste permit staff by calling 517-373-9875.
- Other agency requirements in Michigan. It is recommended you answer the DEQ Permit Information Checklist questions and FAQs at [www.michigan.gov/deqpermits](http://www.michigan.gov/deqpermits) as a starting point for other environmental requirements. Other information about starting up a new business or expanding operations in Michigan is available at [www.michiganadvantage.org](http://www.michiganadvantage.org).
- Local requirements for business operations.

Recyclers may want to list their services in the [DEQ Recycled Materials Market Directory](#), and if they want to do business with state agencies, register as a vendor with the [Department of Management and Budget](#).

## CONCERNS WITH ANTIFREEZE

**Health Risk** Small amounts of ethylene glycol can cause health problems if swallowed by people or pets. It is one of the top ten poisons in dogs and cats in the United States. The lethal adult human dose is less than 7 tablespoons. Children can be seriously harmed when they ingest as little as two tablespoons. One teaspoon of 95 percent ethylene glycol can be lethal to an average 8-pound cat and less than one tablespoon can be lethal to a 20 pound dog. Human health effects range from minor skin irritation to coma, respiratory failure and even death without treatment since exposure to large amounts of ethylene glycol can damage the kidneys, nervous system, lungs, and heart. Propylene glycol has lower toxicity rating than ethylene glycol and is considered to be a safer alternative. Reported health effects usually involve children who have ingested large amounts. A fact sheet from the Agency of Toxic Substances and Disease Registry about ethylene glycol is at [www.atsdr.cdc.gov/tfacts96.html](http://www.atsdr.cdc.gov/tfacts96.html).

**Environmental Risk** Environmental contamination can occur when antifreeze is improperly disposed of or handled. Although microorganisms in the environment will eventually break down virgin antifreeze, many of the contaminants found in used antifreeze cannot. Contaminants include copper, lead, zinc, and 1-4 dioxane. Heavy metals, such as copper and lead, may cause problems at wastewater treatment plants. These metals might keep a plant from meeting its permit discharge requirements. In addition, the sludge created at the treatment plant might exceed maximum heavy metal content requirements and would require the sludge to be handled as a hazardous waste. Spent antifreeze poured onto the ground or into septic systems may eventually contaminate

the groundwater. Spent antifreeze poured into storm drains, ditches, streams, lakes, etc., will contaminate surface water. Biodegradation of large quantities of ethylene glycol may deplete the levels of dissolved oxygen in the water resulting in killing aquatic organisms. Improper disposal may also result in drinking water supplies becoming contaminated.

**The remainder of this document will describe the waste regulations for facilities that are overseen by the DEQ Waste and Hazardous Materials Division — Parts 111 and 121. Reliance on information from this document is not usable as a defense in any enforcement action or litigation. Refer to the regulations or discuss your requirements and questions with a consultant or the regulating agency staff. [DEQ district map](http://www.michigan.gov/deq) is at [www.michigan.gov/deq](http://www.michigan.gov/deq) “Contact DEQ.”**

## CHARACTERIZING USED ANTIFREEZE

To know management requirements, facilities need to determine if unwanted or used antifreeze is either:

- **Usable product.** Keep it in a closed, labeled container and reuse it. The waste regulations would not apply.
- **Waste material.** If it is a waste, then the facility needs to determine if the unwanted antifreeze, even the products labeled “environmentally friendly, is a nonhazardous liquid waste (called liquid industrial waste in the regulations) or hazardous waste. If it is hazardous a facility can choose to manage it as a universal waste. A generator can determine this by:
  - Testing it by having a laboratory run a Toxicity Characteristic Leaching Procedure (TCLP) or using a total metals analysis as a screening test, or
  - Assuming it is hazardous waste and managing it as universal waste or managing it under the applicable facility generator requirements, or
  - Having knowledge that the waste is not hazardous. For example using a material safety data sheet (MSDS) or other manufacturer documentation when getting rid of unwanted virgin antifreeze.

Depending on your company’s situation, your waste disposal company or recycler may have information available about your antifreeze characteristics. The color of antifreeze is no longer an accurate indicator as to its formulation and if different brands are compatible to mix together. Go to [www.filtercouncil.org/techdata/tsbs/05-2.html](http://www.filtercouncil.org/techdata/tsbs/05-2.html) for more information.

**Keep test results or other documentation indicating its characteristics at least 3 years after waste was last generated.**

Waste antifreeze is not a listed hazardous waste but it may exhibit hazardous characteristics due to having:

- Accumulated heavy metals [e.g. lead levels may reach a TCLP concentration of 5.0 mg/L or greater (D008 waste). Spent antifreeze is likely to be hazardous waste if it was from an older vehicle that has been sitting for years and has picked up enough metals and when removed from cheaper radiators containing lead solder.]
- Traces of fuel [e.g. may make it flammable (D001 waste). Spent antifreeze may be hazardous waste if it has been mixed with gasoline or other flammable materials and it has a flashpoint less than 140°F]
- Other contaminants from engine parts at regulated toxicity levels. [e.g. contains benzene TCLP concentrations of 0.5 mg/L or greater that would make it have a toxicity hazardous waste characteristic (D018)]
- Broken down over time and had acids form [e.g. may make it a corrosive hazardous waste (D002) if the pH is less than or equal to 2.0.]

## MANAGEMENT REQUIREMENTS

The specific requirements that facilities must meet depend on if the spent antifreeze has been characterized as a universal waste, hazardous waste, or liquid industrial waste.

General recommendations for all used antifreeze include:

- ✓ Storing the different spent antifreeze chemicals separately to aid in recycling unless the recycling company allows all antifreeze to be mixed together. It is also recommended you do NOT mix spent antifreeze with used oil or any other waste unless your recycler or disposal company allows it.
- ✓ Using dedicated equipment such as drain pans, funnels, and buckets to reduce the risk of contamination from being mixed with other hazardous waste.
- ✓ Using self closing funnels when transferring it to waste containers to help meet the requirements to have closed containers.
- ✓ Not using a container that is lined with paint, resin, or other materials that could further contaminate the used antifreeze.
- ✓ Not using old food or beverage containers for storing antifreeze for safety reasons.
- ✓ Having secondary containment for all storage areas is recommended, and is required under some conditions. For example, containment is required for ethylene glycol when the facility is subject to the Water Bureau Part 5 rules because the antifreeze is in outdoor storage containers and the facility has met the threshold management quantity of 440 pounds of polluting materials, or when the antifreeze is hazardous waste and the facility is a Small Quantity Generator accumulating over 2,200 pounds of hazardous waste or the facility is a Large Quantity Generator.
- ✓ Storing it in a well-ventilated area.
- ✓ Recycling the used product instead of disposing it.

### **LIQUID INDUSTRIAL WASTE (nonhazardous liquids)**

- Store it in a container in good condition with no leaks or defects. It must be compatible with the antifreeze stored in it. Keep the container closed at all times except when emptying or filling
- Keep the exterior of the container free of waste
- Label the container and tank with “Spent Antifreeze” or “Used Antifreeze” and make sure the label is readable
- Protect the containers from weather, fire, and secure from vandalism and physical damage (for example store it where a fork lift or other equipment can not hit it)
- There is no state time limit how long it can be kept on-site if the container requirements are met but check if there are any local restrictions
- Regular inspections are recommended
- [Recycling or disposing of it properly](#)
- Cleaning up any spills immediately and properly characterizing residues to identify appropriate disposal options
- See the [Nonhazardous Liquid Waste Generator Requirements](#) guidance for more information.



## **UNIVERSAL WASTE**

The hazardous waste rules revised in 2008 allows a facility the choice of handling waste antifreeze that meets the hazardous waste characteristics either as universal waste or hazardous waste. See the Universal Waste guidance for information about other wastes that can be managed under these alternative rules (electric lamps, batteries, consumer electronics, pesticides, pharmaceuticals, and devices containing elementary mercury). The universal waste management requirements will depend on if the facility is a Small Quantity Handler (SQH) or Large Quantity Handler (LQH).

- A SQH accumulates less than 11,000 pounds total of all universal wastes at any time. A company may want to use the [small quantity handler inspection form](#) to conduct a self compliance audit.
- A LQH is a facility that accumulates 11,000 pounds or more of all types of universal waste at any time. This designation as a large quantity handler is retained through the end of the calendar year in which this amount of universal waste is accumulated. A company may want to use the [large quantity handler inspection form](#) to conduct a self compliance audit.

There are advantages to handling used antifreeze as universal waste:

- Do not need to include this amount when calculating your hazardous waste generator status. This may allow some companies to reduce their generator status level and regulatory requirements. For example, a large quantity generator who manages part of their hazardous waste stream as universal waste may be able to become a small quantity generator or conditionally exempt small quantity generator of hazardous waste.
- Universal waste can be accumulated up to one year which is a longer accumulation time than allowed for a small quantity and large quantity generator's hazardous waste.
- Less labeling is required than hazardous waste.

### **Universal waste requirements include:**

- Labeling containers and tanks with words "universal waste antifreeze," "waste antifreeze," or "used antifreeze"
- Keeping containers closed, except to add or remove universal waste
- Using containers that are structurally sound, compatible with the antifreeze, and that lacks evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions
- [Recycling or disposing of it properly](#) including obtaining a site identification number when required to use it on a manifest when shipping it off-site (required by Part 121)
- Having storage tanks meet additional requirements in [40 C.F.R. part 265, subpart J](#), except for 40 C.F.R. §§265.197(c), 265.200, and 265.201, which includes, but not limited to:
  - Professional engineer certifications required for new tank systems and integrity assessments of existing tank systems that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste to be stored or treated to ensure that it will not collapse, rupture, or fail
  - Inspections at least once each operating day (Note: Michigan did not adopt the [EPA Performance Track](#) regulations that allow those members to have less frequent inspections).
  - Secondary containment
  - General operating conditions
  - Release reporting and cleanup
  - Closure and post-closure care
- Cleaning up any spills immediately and properly characterizing residues to identify appropriate disposal options

## HAZARDOUS WASTE

If the company chooses to manage used antifreeze as a hazardous waste, then the company needs to meet the specific management requirements for that facility's generator status — large quantity generator (LQG), small quantity generator (SQG), or conditionally exempt small quantity generator (CESQG).

- ✓ Store in a container in good condition with no leaks or defects. It must be compatible with the antifreeze stored in it. Keep the container closed at all times except when emptying or filling.
- ✓ Label requirements depend on where the container is located:
  - If the container is in an accumulation area, the label has to have the words "hazardous waste" along with the hazardous waste code and the accumulation start date on it. That is the date waste was first put into the container. A CESQG can label it "Spent Antifreeze" or "Used Antifreeze."
  - If the container is being used as a "satellite container," it must be labeled with the words "hazardous waste" and the waste code **or** the chemical name like "used ethylene glycol". A satellite container is one used to accumulate up to 55 gallons of hazardous waste, or one quart of acutely hazardous waste, at the point of generation. There is no limit on how long the satellite container can be kept at its location as long as it is used on a regular basis, the operator has control of the process generating the waste, and the satellite accumulation does not exceed the 55-gallon limit. The use of "spent or used antifreeze" is recommended for containers holding spent antifreeze that is hazardous waste as an aid for your employees, but it is not required.
- ✓ SQG and LQG must provide secondary containment of the storage area.
- ✓ Store it no longer than the allowable time period:
  - CESQGs do not have a state time limit but there may be local restrictions.
  - SQGs may accumulate up to 180 days. If the distance to the treatment, storage, and disposal facility is over 200 miles, then it can be accumulated up to 270 days.
  - LQGs may accumulate up to 90 days.
- ✓ Inspect the containers holding hazardous waste for signs of corrosion and leaks. Tanks have other specific requirements.
  - CESQGs have no state specified inspection time schedule. Check if there are any local restrictions.
  - SQGs and LQGs must inspect containers weekly. LQGs are required to keep written inspection records for at least 3 years. It is recommended other generators keep records.
- ✓ Recycling or disposing of it properly
- Cleaning up any spills immediately and properly characterizing residues to identify appropriate disposal options

### **Hazardous Waste Generator Status Categories**

In ONE month, the total amount of ALL nonacute hazardous waste is generated at the following volumes:

**LQG:** more than 1,000 kg (2,200 pounds) [and/or 1 kg (2.2 pounds) or more of acutely and severely toxic hazardous waste is generated.]

**SQG:** 100 kg (220 pounds) to less than 1,000 kg (2,200 pounds). Accumulation never exceeds 6,000 kg (13,200 pounds).

**CESQG:** less than 100 kg (220 pounds). Accumulation never exceeds 1,000 kg (2,200 pounds).

There are also storage time limits.

## RECYCLING AND DISPOSAL OPTIONS

Recycling and disposal options include the following methods:

1. Wash the spent antifreeze down the drain **ONLY IF** the drain is connected to a municipal wastewater treatment facility and **IF prior permission has been obtained from the sewer authority**. It is recommended this permission be in writing.
  - Ø Used antifreeze **cannot** be discharged to storm drains or onto the ground under any circumstance.
  - Ø Used antifreeze **must never** be discharged into a drain that leads to a septic system.
2. Obtain a site identification number if the facility does not already have one, hire a permitted and registered transporter, and manifest the antifreeze when having it hauled off-site by a commercial hauler. Submit the form EQP5150 if the facility does not already have a site identification number. If a facility needs to update information already on file with the Waste and Hazardous Materials Division, request a prepopulated EQP5150 form according to the instructions on the Waste Data System webpage at [www.deq.state.mi.us/wdspj](http://www.deq.state.mi.us/wdspj). The notification is required for a liquid industrial waste generator, and as a large quantity universal waste handler, along with any other regulated waste activities for the site.

Hire a permitted and registered transporter to deliver the waste to a facility that has notified the Waste and Hazardous Materials Division they are operating a liquid industrial waste designated facility or licensed hazardous waste treatment, storage and disposal facility (TSDF). It may be taken to a recycling operation, disposal facility, or to a municipal waste water treatment plant that allows disposal of the antifreeze into its system and that has notified the DEQ as being a destination facility.

- Use a manifest to track the waste shipment. Many haulers provide manifest copies. If they do not, see information on how to order them from EPA approved printers at [www.michigan.gov/deqwaste](http://www.michigan.gov/deqwaste) "Manifest Information". Complete the manifest and distribute the copies in accordance with the instructions available on the website. Keep your copy and submit the DEQ copy to the Waste and Hazardous Materials Division within 10 days after the end of the month in which the shipment occurred. Make sure to get a copy back from the TSDF within the allowable time frame. A timetable flow chart and tracking log is available online. Use waste code 030L on the manifest.
  - If the transporter uses a consolidated manifest, they need to provide you a receipt with the following information:
    - ✍ Name and address of your facility and where the waste is being taken
    - ✍ Amount and type of waste shipped off-site
    - ✍ Date of pick up
    - ✍ Consolidated manifest number being used by the transporter (The waste code on the consolidated manifest would be 030LC.)
    - ✍ Driver's signature
    - ✍ Transporter's company name
3. Haul your own generated antifreeze to a destination facility that has notified the Waste and Hazardous Materials of their operations if you meet the following requirements:
    - ◆ If you haul 55 gallons or less of your own liquid industrial waste or if the antifreeze is hazardous waste from a CESQG to :
      - A manifest is not required if you have a record go with each shipment that includes your facility's name and address, a description of the waste, how much waste is in the shipment, and where you are taking the waste.
      - Obtain a signature from the designated facility acknowledging receipt of the waste and give them a copy of the record and you keep a copy for at least 3 years from date of shipment. Some facilities will keep these records until they sell the business or site as proof they properly handled the waste.
      - Have required insurance coverage if the shipping vehicle is involved in an accident (see following amounts)



- ◆ If you haul over 55 gallons of your own liquid industrial waste, you must:
  - Obtain a site identification number and notify the Waste and Hazardous Materials Division on form EQP5150 that you are transporting your own waste
  - Use a waste manifest and meet those requirements
  - Have required insurance coverage and obtain a copy of the MCS-90 (endorsement for motor carrier policies of insurance for public liability under Section 20 or 30 of the Motor Carrier Act of 1980) from your insurance company and submit it to:

DEQ WHMD  
 Attn: Transportation Program Technician  
 Southeast Michigan District Office  
 27700 Donald Court  
 Warren MI 48092-2793

If the vehicle is under 10,000 pounds gross vehicle weight, have fleet insurance coverage of at least \$300,000.

If the vehicle(s) are 10,000 pounds gross vehicle weight, have fleet insurance coverage of at least \$750,000.

4. Operate a [closed loop recycling unit](#) that connects directly to the radiator. It filters the antifreeze and puts it directly back into the vehicle. You could eliminate managing antifreeze as a waste with this type of system. Check with the vehicle manufacturer if their warranty will cover this.

DEQ has a Michigan Recycled Materials Market Directory available at [www.michigan.gov/deqrmmd](http://www.michigan.gov/deqrmmd) that includes antifreeze recyclers. EPA has an equipment vendor list at [es.epa.gov/vendors](http://es.epa.gov/vendors).

5. Contract with a mobile recycling service that comes to your business and recycles the antifreeze on-site.
6. Operate an [on-site recycling unit](#) and use the recycled fluids. There are several methods used for antifreeze recycling including filtration, distillation, reverse osmosis, and ion exchange. It is usually necessary to add chemicals to recycled antifreeze. On-site recycling equipment can be purchased or leased.



To find antifreeze distillation unit equipment vendors go to [www.iwrc.org/tools/tools.cfm](http://www.iwrc.org/tools/tools.cfm) and <http://es.epa.gov/vendors/index.html>. To compare on-site recycling costs and estimate payback period for obtaining equipment, see the active excel worksheet at [www.iwrc.org/downloads/excel/AntifreezeOnsiteBatchWorksheet.xls](http://www.iwrc.org/downloads/excel/AntifreezeOnsiteBatchWorksheet.xls)

Recycling may save you money by:

1. Reducing purchasing costs of virgin antifreeze
2. Reducing waste disposal costs

If recycling on-site,

- ✓ If only recycling antifreeze your facility generated, you do not need a treatment permit from the Waste and Hazardous Materials Division.
- ✓ Obtain an air permit if required for the equipment discharging air emissions. Contact the Air Quality Division District Office to discuss your operation.
- ✓ Characterize the sludge to determine what kind of waste is from the recycling unit
  - If hazardous waste, include this amount when calculating your generator status and meet the applicable hazardous waste generator requirements.
  - If nonhazardous and contains liquids, handle the sludge as liquid industrial waste.
  - If nonhazardous and does not contain free liquids, dispose of it in the landfill with the landfill authorities approval.
- ✓ Meet Water Bureau industrial storm water permitting requirements if subject to that program. Information is at [www.michigan.gov/deqwater](http://www.michigan.gov/deqwater) "Surface Water" "Storm Water."
- ✓ If handling, storing, or recycling antifreeze that was characterized as hazardous waste and was generated by someone else, a TSDF construction permit and operating license is required. Contact the Waste and Hazardous Materials Division District Office.

## RELEASE REQUIREMENTS

- Train employees about safe handling practices and spill and emergency response. Contact [MIOSHA Consultation Education and Training Division](#) at 517-322-1809 for HAZWOPER requirements when employees respond to releases.
- Clean up all spills and releases. The response will depend on the type of antifreeze waste, the volume spilled, and where it was spilled.

When cleaning up small spills, remember to first use dry clean-up methods such as dry mops, rags, or absorbents. Using water to address a spill may create contaminated wastewater and make the spill harder to contain. For small spills, use a rag or an absorbent to wipe up the antifreeze and either have them laundered for reuse or properly disposed of them. Absorbents used to clean up nonhazardous antifreeze that do not contain free liquids can be sent to a licensed solid waste landfill if the landfill authorities accept it. If absorbents were used to clean up hazardous waste, it would be necessary to determine if the cleanup materials is characteristic hazardous waste.

The steps below offer a helpful guide to how to react in the case of a somewhat larger spill.

- ◆ Contain the spill; use absorbent pads, socks, or berms to keep spilled liquid out of any floor drains unless you have permission from the wastewater treatment plant authorities to allow the discharge into their system
- ◆ Remove any potential hazards in the area
- ◆ Use a dry or hydrophobic mop or broom, squeegee and dust-pan, or vacuum to clean up most of the spilled liquid
- ◆ Use a rag or other absorbent to clean up the remaining liquid and if necessary clean up the floor with soap and water
- ◆ Remember to store the recovered liquids in separate and clearly marked containers so that they can be properly disposed of

For large spills, contact your emergency response contractor or your on-site trained responders that meet HAZWOPER requirements.

- Report spills when required. There are different regulations that require release reporting when a facility meets certain conditions or reportable quantities have been met or exceeded. See release reporting information at [www.michigan.gov/degrelease](http://www.michigan.gov/degrelease). For example, ethylene glycol has a 500 pound RQ under Part 201 and when a facility is subject to the Part 5 rules, and it has a 5000 pound RQ under the federal CERCLA regulation. The waste regulations require spills of non hazardous antifreeze to be reported when a fire, explosion, or discharge of the waste could threaten the public health, safety and welfare, or the environment, or when release reached surface or groundwater.

If in doubt if you need to report a release, contact:

- 911
  - National Response Center (NRC) 800-424-8802
  - MI Pollution Emergency Alerting System (PEAS) 800-292-4706 or 517-373-7660 if calling from out of state
- Direct questions about spill reporting and response requirements to the DEQ Remediation and Redevelopment District Office staff.

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